LOUISIANA Conservationist

September/October 1994 $1.50

Joe L. Herring, Secretary

Comments

Many of you are aware that we recently petitioned the U.S. Fish and Wildlife Service to remove the brown pelican from the Endangered Species List. Unfortunately, our petition was rejected. Once again, this department has successfully restored a depleted or "lost" species through careful management and hard work. Once again, our success has become mired in the bureaucratic paper shuffling of the Endangered Species Act. It is little wonder there is a growing discontent in this country with the often unjustifiable rigidity of the Act.

The restoration of the brown pelican in Louisiana has been entirely the work of this department. When the decision was made in the mid 1960s to attempt to rebuild our pelican population, Dr. Leslie Glascow and I established the initial contacts with Dr. O. Earle Frye, director of Florida's Game and Freshwater Fish Commission. We then met with Dr. Frye at Ft. Myers, Fla., from April 24 through April 26, 1968. We worked out an arrangement to capture brown pelicans in Florida and relocate them to Louisiana. This was entirely a cooperative effort between Louisiana and Florida. Between 1968 and 1980, more than 1,200 Florida pelicans were moved to the southeast Louisiana coast, which was the area of traditional pelican nesting in Louisiana.

After 25 years of intensive management efforts by the Department of Wildlife and Fisheries, and despite the effects of hurricanes and habitat alteration and loss, we now have some 5,000 nesting pairs. In 1993, more than 8,500 young pelicans were fledged from those nests.

Louisiana now has a healthy, viable and increasing population of brown pelicans occupying most, if not all, of that species' traditional nesting range.

Now the federal government says they want to see 10,000-15,000 nesting pairs before delisting the pelicans. That is the estimated "historical level," back when the state had an estimated 50,000 pelicans along the southeastern coast. Those numbers may well never occur again, just as the "historical level" of Ivory-Billed woodpeckers, Florida panthers, black bears, or red cockaded woodpeckers will probably never be reached again. Due to continuing coastal erosion and other factors altering the traditional habitat of the species, the real world of today is simply not the same as the "historical" world of 50 years ago.

Somehow, the Endangered Species Act has to be made more realistic and more responsive to the changes that have occurred and that will continue to occur in the real world. Somehow, we have to realize that we can have real conservation and environmentalism without fanaticism.

Louisiana Conservationist
ISSN 0024-6778
Volume 46, No. 5
Baton Rouge, LA 70808

Edwin W. Edwards, Governor
Joe L. Herring, Secretary
Clyde W. Kimball, Deputy Secretary
Fredrick J. Prejean, Sr., Undersecretary
L.G. "Lee" Caubarreaux, Asst. Secretary
William S. "Corky" Perret, Asst. Secretary

Wildlife and Fisheries Commissioners
John F. Schneider, Ponchatoula, Chairman
Joseph B. Cormier, Lafayette, Vice Chairman
Perry Gisclair, Golden Meadow
Jerald Hanchey, Lafayette
Bert Jones, Ruston
Tee John Mialjevich, Belle Chase
Peter Vujnovich, New Orleans

Division Administrators
Hugh Bateman, Wildlife
Bob Dennie, Information/Education
Bennie Fontenot, Inland Fisheries
John Roussel, Acting, Marine Fisheries
Johnnie Tarver, Fur/Refuge
Winton Vidrine, Enforcement

Magazine Staff
Bob Dennie, Editor
Marianne Marsh, Associate Editor
Maurice Cockerham, Information Manager
Clifton Coles, Staff Writer
Andy Crawford, Staff Writer
Juanita Carden, Circulation Manager
Wayne Miller, Art Director

Copyright 1994 by the Louisiana Department of Wildlife and Fisheries. This publication is not responsible for unsolicited manuscripts, photographs or other materials.

The Louisiana Conservationist is published bimonthly except July/August, by the Louisiana Department of Wildlife and Fisheries, 2000 Quail Drive, Baton Rouge, LA 70808, (504) 765-2918. Second-class postage paid at Baton Rouge, LA and additional mailing offices. POSTMASTER: send address changes to Louisiana Conservationist, P.O. Box 98000, Baton Rouge, LA 70898.

Regulations of the U.S. Department of the Interior strictly prohibit unlawful discrimination in departmental federally assisted programs on the basis of race, color, national origin, age or handicap. Any person who believes he or she has been discriminated against in any program, activity or facility operated by a recipient of federal assistance should write to: Director, Office for Equal Opportunity, U.S. Department of the Interior, Washington, D.C. 20240.

This public document was published at an average cost of $51,751.60. Approximately 45,500 copies of this document were published at an average printing cost of $23,910.44. The total cost of all printings of this document, averages $23,910.44. This document was published for Department of Wildlife and Fisheries, 2000 Quail Drive, Baton Rogue, Louisiana, 70898-9000, by Harvey Press, Incorporated, to provide information on outdoor opportunities in Louisiana. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statues.

Conservationist

Published by the Department of Wildlife and Fisheries in
the interest of conservation of Louisiana natural resources.

In This Issue

4 *Louisiana's Vanishing Coast: Part IV*
By Philip Bowman, Dr. Len Bahr, Paul Coreil & Dr. S.M. Gagliano
Strategic Measures

8 *10 Years and Counting by Andy Crawford*
A look at Operation Game Thief.

11 *Rx For Good Deer Management*
By David Moreland
The prescription to good age and growth deer studies.

14 *It's Squirrel Season Again!*
By Doyle L. Adams
Squirrel hunting is for everyone.

17 *Bringing Back Bobwhite by Fred Kimmel*
The story of the quail.

20 *Are You Using Your Decoys Effectively?*
By Charles Frank
Strategy on decoy placements.

24 *Decoding Secrets of Louisiana Fish*
By Sara Ann Harris
Microscopic messages deciphered from fish bones.

27 *Pomme De Terre Wildlife Management Area*
By Vic Blanchard
A brief profile of a WMA.

29 *Education Corner: Camouflage*
By Lyle Soniat & Yolanda Bondi

31 *Law Lines by Capt. Keith LaCaze*

32 *Louisiana's National Hunting & Fishing Day*

33 *Conservation Notes*
Wildlife and Fisheries news briefs.

35 *Bayou Kitchen by Wayne Miller*
Louisiana flounder

Front Cover
By Allen Riley
Louisiana's Brown Pelican

Back Cover
LDWF file photo
Pomme de Terre WMA

In Next Issue

Louisiana's Vanishing Coast: Part V
The final episode.

LDWF file photo

LOUISIANA'S *VANISHING* COAST PART IV:

STRATEGIC MEASURES

BY PHILIP BOWMAN, DR. LEN BAHR,
PAUL COREIL & DR. S.M. GAGLIANO

There are some who maintain that the catastrophic problem of Louisiana's disappearing coastline is beyond our control. They say that continued sea level rise and subsidence of the land will force us to gradually retreat from the coast and watch our wetlands and coastal communities sink beneath the waves. On the other hand, a growing number believe there is a potential solution on the horizon and the national treasure we know as the Louisiana coastal wetlands should be the nation's top environmental priority.

The Department of Wildlife and Fisheries and various other agencies have been managing coastal marshes for some time in an attempt to slow the rate of wetland loss. In addition to the marsh management techniques that have been developed at the department's Rockefeller Refuge, the department has been very supportive of controlled freshwater introduction and was first to construct a controlled freshwater diversion structure at Bayou Lamoque in 1956.

Now the state and the federal government have launched broad new initiatives in an attempt to save Louisiana's coastal wetlands.

During 1989, the Louisiana Legislature passed the Louisiana Coastal Wetlands Conservation, Restoration and Management Act commonly referred to as Act 6. Act 6 has as its primary intent the conservation and restoration of vegetated wetlands. Among other provisions, Act 6 established a Wetlands Trust Fund which receives a portion of the mineral revenues paid to the state. The Trust Fund was created through a constitutional amendment and approved by more than two-thirds of the state's voters. This fund can receive as much as $25 million a year but, due to declining state mineral revenues, it is projected that the fund will not have sufficient revenue by the end of next year to match federal dollars available to continue the fight to save coastal Louisiana.

Act 6 also created within the Department of Natural Resources the Office of Coastal Restoration and Management, set up an Office of Coastal Activities within the Governor's Office, established a Wetlands Conservation and Restoration Task Force and required that an annual Coastal Restoration Plan be developed. As a result of Act 6, more than 200 coastal restoration projects have been completed across the state.

In 1990, the U.S. Congress passed the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). Commonly referred to as the Breaux-Johnston Act, CWPPRA provides as much as $35 million a year for coastal restoration projects in Louisiana. Additionally, CWPPRA established a federal-state task force whose purpose is the conservation and restoration of vegetated wetlands.

The CWPPRA Task Force is required to develop an annual priority list of projects and prepare a comprehensive plan for the restoration of the Louisiana coast. The CWPPRA plan was submitted to Congress in late 1993. This plan provides for a number of priority restoration projects for each coastal basin that should help slow the loss of wetlands and buy time while more dramatic projects are proposed and designed.

During 1993 the Governor's Office of Coastal Activities sponsored a workshop for state agencies to discuss a number of the most far-reaching concepts that have been proposed during the past 20 years. These concepts are incorporated in a concise long term (50 years+) state coastal plan titled: *An Environmental-Economic Blueprint for Restoring the Louisiana Coastal Zone: the State Plan.*

The overall premise of the state coastal restoration blueprint is that it is technically possible and economically sound to restore the Louisiana coast to a functional equivalent of its former condition. The principal challenge will be to overcome a long term sediment deficit in the continuously subsiding coastal zone by a variety of techniques.

The two primary goals of the coastal blueprint are:

A. To achieve a "no-net-loss of wetlands" condition that will continue to provide productive fish and wildlife habitat, high coastal water quality, storm buffering capacity and ecotourism potential.

B. To create a sustainable coastal economic resource base and to provide for flood protection of coastal residents.

The plan itself can be broken down into defensive and offensive components. The

The Caernarvon Freshwater Diversion Project, shown below, diverts water from the Mississippi River into the marshes of Plaquemines Parish.

LDWF file photo

The Mississippi River carries from 250,000 cubic feet per second (cfs) to a million cfs during a typical annual cycle of low to high water.

principal lines of defense include refurbished barrier islands and created barriers such as oyster reefs that may become self sustaining.

Terrebonne Parish recently sponsored a study of the projected effect of restoring the barrier islands of Terrebonne Parish. This study indicated that about 100,000 acres of wetlands would be protected by this action, which is estimated to cost as much as $1 billion, depending upon the availability of sand and the possible use of armoring techniques (detached breakwaters) as a means of increasing the life expectancy of refurbished islands.

Another significant defensive measure called for is the modification of some major navigation channels, using locks or weirs to block saltwater intrusion. Any proposed changes to navigation channels need to be carried out in ways that will not stifle or constrain the navigation industry, which is a vital part of a sustainable coastal economy.

Other potential long-term implications of the new coastal blueprint include the use of the Gulf Intracoastal Waterway to transport freshwater and sediments from the Atchafalaya River to nourish western Terrebonne marshes and wetlands in various parts of the Chenier Plain and the potential construction of a new deep-water channel from Empire, shortening the shipping distance from New Orleans. Construction of this new navigation channel would allow the present birdsfoot delta at the mouth of the Mississippi River to become a new chain of barrier islands that would help protect New Orleans and the coast.

The primary offensive element of the new coastal blueprint is a call for the maximum use of the water and sediment in the Mississippi River to maintain and build marshes. Every ton of sediment that washes off the coast into the deep Gulf represents the unnecessary waste of a significant resource. The Mississippi River carries a huge volume of water, from 250,000 cubic feet per second (cfs) to a million cfs during each typical annual cycle of low to high water. During extreme floods, the river system has been known to carry over 1.7 million cfs.

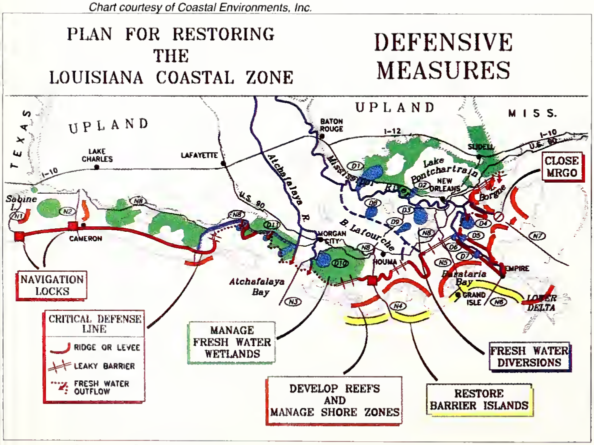
The Atchafalaya delta is the only part of the coast that is growing, and the rate of this growth would increase if the proportion of Mississippi River water that is allowed to flow down the Atchafalaya system were increased from the 30 percent it currently carries. This concept, supported by some coastal experts, raises strong concerns among local residents and the idea will only be considered feasible if it can be shown that additional flood-related problems would not result.

The coastal blueprint also calls for small to moderate river diversions into the upper basins during the high water stage that occurs during winter and spring. These diversions, totalling 50,000 cfs into each of the three largest basins in the deltaic plain (Pontchartrain, Barataria and Terrebonne), are estimated to be sufficient to maintain indefinitely the freshwater marshes and swamps.

One of the more dramatic components of the coastal blueprint is the concept of reopening Bayou Lafourche (i.e., reconnecting it to the Mississippi River) to carry about 10 percent of the river flow. This idea is getting more and more attention, especially by the 8 percent of the Louisiana population who depend upon Bayou Lafourche for drinking water and industrial freshwater.

The primary effort in the defensive measures of restoring Louisiana's coast is to refurbish barrier islands and create new barriers, as shown below.

Chart courtesy of Coastal Environments, Inc.



'he reopened bayou, or an artificial chan-
el parallel to the bayou, would carry wa-
er and sediments to nourish marshes in
oth the Barataria and Terrebonne basins.

Another major feature of the diversion
ortion of the coastal blueprint is the con-
ept of creating from seven to 10 carefully
nanaged subdeltas at key locations in the
ower portions of the deltaic plain basins in
outheast Louisiana. This feature involves
reating one or more very large river diver-
ion channels south of New Orleans. One
f the prime locations for a managed
ubdelta is in Breton Sound, where an esti-
nated 5,000 acres of marsh could potentially
e created each year.

This prime marsh creation area represents
conflict, however, because Breton Sound
s a highly productive oyster production
rea. Conflicts between diversion projects
nd oyster beds are a perfect example of the
ind of economic displacement that must be
nticipated and planned for in terms of long
ange planning to restore a functional Loui-
iana coast.

Socioeconomic impacts of all kinds are
onsidered in the new coastal blueprint,
vhich recognizes that flood protection, vi-
ble coastal industry including navigation,
nd fishery impacts are as critical as wet-
and creation/conservation.

The maximum use of the Mississippi
iver system to build and maintain man-
ged subdeltas via diversions will not by
nemselves be sufficient to achieve a no-net-
oss of wetland in a reasonable time. In other
vords, some additional means of adding
ediments to eroding marshes will be re-
uired.

The most attractive means of conveying
rge quantities of sediments long distances
s the use of pipelines and pumps that can
ush "slurried mud" or toothpaste-like con-
entrations of sediment. When I-10 was
uilt in low areas in the vicinity of LaPlace,
iver sand was mined and transported via
ipelines as a means of raising the low ar-
as to build a stable roadbed. There is no
eason (other than cost) that this technique
ould not be used to restore or create wet-
ands virtually anywhere in the coastal
one, especially in areas remote from pro-
pective subdelta areas.

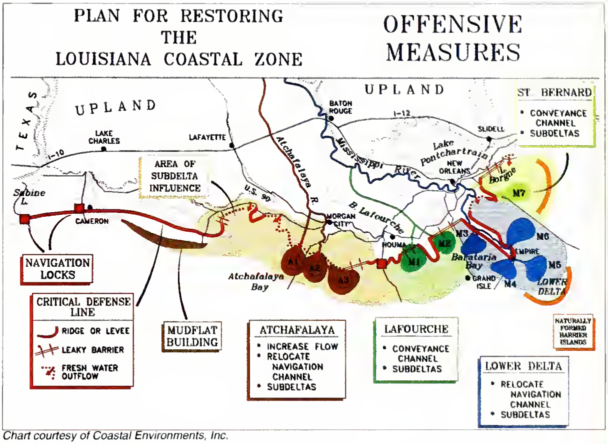


Chart courtesy of Coastal Environments, Inc.

It is estimated that a no-net loss of wetlands in the Louisiana coast could be achieved using this coastal blueprint within about 25 years. The cost of achieving this situation by implementing the features of the long term blueprint will not be cheap — unless the cost, which is estimated to exceed $4 billion, is compared to the alternative of doing nothing. The 50 year projection for the Louisiana coast implies the loss of a vital renewable fishery resource, a social culture, a hurricane buffer for people and industry and infrastructure losses that are almost inconceivable.

Restoration of the Louisiana coast will require the effective and efficient use of all technology currently available. Residents of the coastal areas will need to understand the changes that the restoration activities bring about. One thing is certain, the Louisiana coast has changed through time and it will continue to change. If we don't succeed in restoring and maintaining it, however, we will not like the changes nature has in store for us.

Our next article will look further into current restoration efforts as well as attempt to look into the future and explore some of the changes that we might expect to see in coastal Louisiana. ■

In an offensive measure to restore the coastal zone, water and sediment from the Mississippi River will be used to maintain and build marshes.

10 YEARS and COUNTING

BY ANDY CRAWFORD

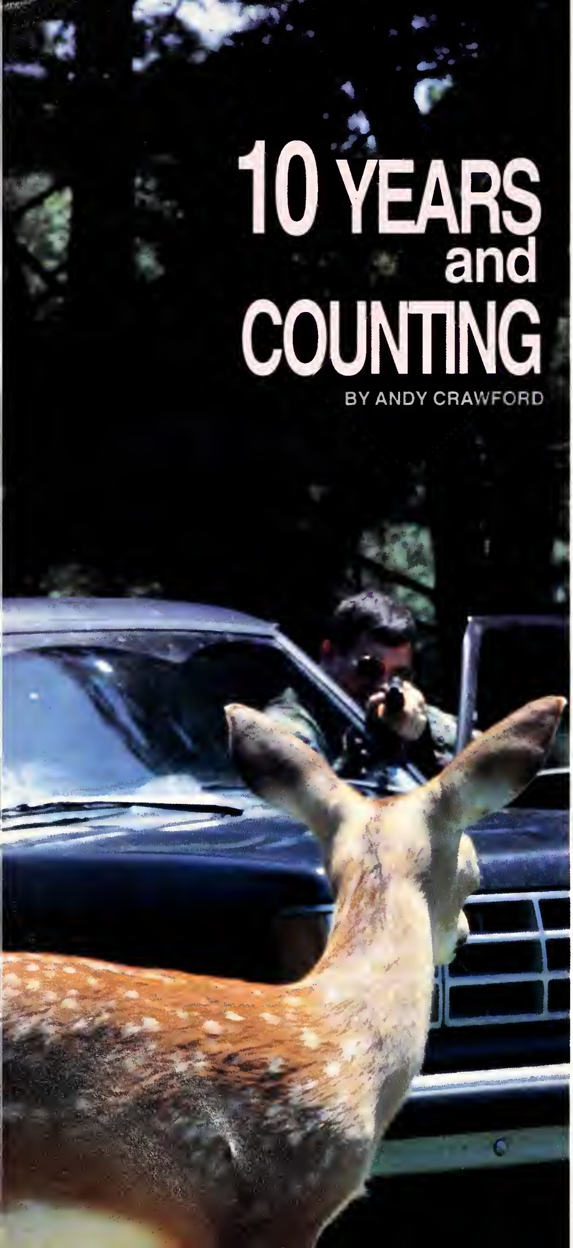


Photo by Andy Crawford

Information obtained through OGT has led to the arrests of 734 poachers.

Headlighting deer, taking over the legal limit of fish or game animals and shooting a Bald Eagle all have two things in common. They are crimes committed by criminals and those criminals rob every law-abiding Louisiana citizen of precious natural resources.

While the Department of Wildlife and Fisheries puts more than 200 enforcement agents in the field to try to control such crimes, they are hampered by the sheer size of the state.

"Rarely will an officer, in the course of patrolling, stumble upon a major violation or an accomplished violator," said LDWF's Capt. Keith LaCaze. "To make those types of cases, we have to rely upon the public to supply us with information that will put us in the right place at the right time."

That need for information gave birth to Operation Game Thief, now in its 10th year. It provides a conduit for anonymous information which allows enforcement agents to know when and where violations are being committed. Agents then can respond quickly instead of relying upon blind luck to discover violations.

"It opens the door to the secretive community of the professional outlaw," LaCaze said.

The movement that led to the founding of the Louisiana chapter of Operation Game Thief (OGT) began about 1978 when concern was growing about conserving natural resources and cleaning up adverse national perceptions of the Bayou State.

"At that time, our state had a rather poor image for wildlife enforcement," said Bill Chapman, who has been involved in the organization since its beginnings. "We wanted to clean up that image. We wanted to show people we were concerned about conservation."

The idea of a citizens group dedicated to obtaining inside information about wildlife and fisheries crimes was supported by enforcement agents. "It was a really interesting concept to all of us in the field because we always knew the paid informant was instrumental in other kinds of law enforcement, but it had never been used in wildlife enforcement here in Louisiana," LaCaze said.

By 1984, in response to successes in other states, OGT became a reality in the Bayou State. It emulated other programs ranging from OGT chapters in New Mexico and Colorado to East Baton Rouge Parish's Crime Stoppers and, like those programs, included a toll-free telephone number (1-800-442-2511) for reports of violations. The telephone line was installed at LDWF's headquarters communications facility.

A system of rewards also was developed. Amounts paid out for individual cases vary depending upon what game species is involved and how much the information contributes to the investigation. Rewards start at a minimum of $100 for small game violations and a minimum of $300 for big game violations. The maximum for reports is $1,000.

"The rewards are substantial, especially when you consider that a telephone call on a big game case can get you $300," said LaCaze, who coordinates OGT activities for the department.

Informants apparently agree with LaCaze. The organization has handled more than 1,800 telephone calls and helped enforcement agents make 734 arrests. Total payouts had reached $97,780 as of this spring. OGT officials are hopeful of reaching the $100,000 mark by the end of the year. With payouts averaging $9,000 a year, that goal is a real possibility.

Informants do not have to wait for a conviction to receive their reward. OGT distributes rewards based only upon an arrest being made. "We can get people their money within three months," LaCaze said. "You don't have to put things on hold due to a crowded court docket."

Obtaining money to fund this system of rewards was the most difficult aspect of setting up the program. "We didn't have any idea how many phone calls we were going to get and how much money we would be able to pay out," Chapman said. "We had to find some way to get some money to pay out when we had to pay some rewards."

Publicity from then-Governor. Edwin Edwards' pledge to pay the first $1,000 reward helped, but fund raising consisted mostly of Chapman and other OGT board members hitting the bricks and soliciting contributions from businesses, friends and anyone else who showed interest. Raffles also have become a part of the OGT fund-raising modus operandi.

"We received contributions from a whole lot of different people who were staunch conservationists," said Mark Dupuy, OGT's original president.

These donations have been crucial to OGT's success. "It's hard to get people to report crimes," said retired LDWF Maj. Vince Darby, who helped set up the program. "The rewards make people do that and they will start looking around for other violations."

Any doubts about what this type of reward-driven program could accomplish in Louisiana were dispelled only two years after OGT's inception, when information was received that led to the investigation of a large illegal game fish racket. This ring included several people who were illegally netting crappie and other game fish in the Saline/Larto area and selling them.

"These people would bring them to middle men who would pay them $1 to $2 a pound and then freeze the fish," LaCaze said. "When these middlemen had accumulated enough for a good shipment, they would move the fish to other states and acquire forged papers to make them appear to be legally-taken fish or domestically-raised fish."

The fish then would be sold in northern cities such as Chicago for between $5 and $6 per pound, LaCaze said. "One of the middlemen was netting in the neighborhood of $80,000 a year tax-free through this ring," LaCaze said.

It is just such important tips that inspire continued dedication by OGT members. "People are beginning to say, 'Hey, this re-

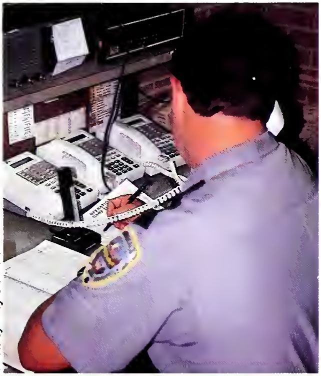


Photo by Andy Crawford

OGT's toll-free telephone number, 1-800-442-2511, allows information about outdoor violations to be relayed directly to LDWF Enforcement Division personnel. This results in quick response time by enforcement agents.

Photos by Andy Crawford

LDWF file photo

Cellular telephones and easy access to the OGT hotline number, top, allow those who observe violations of wildlife laws to report the crimes quickly. Such reports lead to quick arrests, and confiscation of illegally obtained game.

source is not unlimited,'" Chapman said.

The need to fund rewards, however, has consumed the 35 OGT members' time, leaving little time to expand the services of this important group. "With that small a group, it's difficult to raise money and do anything else," current OGT president Dr. George Dugal said.

Therefore, board members are working to set up a $100,000 endowment fund that will provide enough yearly interest to pay for rewards. Thus far, they are about halfway there, with pledges such as that of Willamette Industries, which has committed to donate a penny for each acre it leases to hunting clubs for the next four years. The pennies add up to about $20,000. Other large landowners also are being approached to donate money to the trust.

The incentive for these large landowners to contribute to the endowment fund is simple: "Better enforcement puts more deer, more ducks, more rabbits, more of everything on their land. If they have more wildlife on their property, it's worth more to the people who are leasing it," Dugal said.

Estimates are that the endowment fund will become a reality within five years.

OGT members will then focus on informing the public about the organization. "It's amazing how few people in the state know about Operation Game Thief," Dugal said. "They've heard about it, but they don't know what it is and what it does."

OGT members also have plans of reaching into the school system to educate the state's children. "Education is important because not only will we reward those who report violations, but we will be educating youngsters about the merit of never going down the road of violating the law," said Charlie Wiggins, who is spearheading these educational efforts.

Though still in the planning stages, all involved agree that education is important. "A lot of the older generation of hunters and fishermen do not perceive poaching as being harmful to wildlife," LaCaze said. "We have to educate the younger hunters and fishermen about the impact of poaching and their responsibility to stop it."

Wiggins said students will be approached through various methods. "The possibilities are endless: everything from printed material and videos to guest speakers. We can do a lot of things to really demonstrate to students the importance of wildlife in the state," he said.

Outdoorsmen around the state can look to OGT as an example of what a little initiative and dedication can accomplish. While the efforts of this handful of dedicated outdoorsmen are to be applauded, it is time we all take an active part in conserving the wonderful natural resources which we enjoy.

Dr. George Dugal's reasoning behind his participation in OGT should be shared by anyone wishing to pass on Louisiana's natural heritage to their children and grandchildren.

"I have hunted and fished all my life. It's time for me to put something back—to do something for the resource and for the next generation." ■

HOW YOU CAN HELP

- Immediately report any wildlife and fisheries violations by calling the 24-hour hot line at 1-800-442-2511.
- Memorize important details, such as license plate numbers, vehicle colors and number of people and description of those involved in violations.
- Tell friends about OGT. All-weather signs sporting the toll-free telephone number can be obtained by calling regional LDWF offices.
- Remember that OGT is interested in all wildlife and fisheries violations. Whether it be the killing of a spotted fawn or a songbird, everyone loses.
- Make it known that you will not tolerate violations. The only way progress is made toward changing attitudes is by taking a stand against unethical and illegal activities.
- Become involved in OGT, which meets quarterly to distribute rewards. Information on where meetings are held can be obtained by calling Capt. Keith LaCaze at 504/765-2980.
- Make a tax-deductible contribution to the endowment fund. Send check to Operation Game Thief, Louisiana Department of Wildlife and Fisheries, P.O. Box 98000, Baton Rouge, LA 70898-9000.

Rx FOR GOOD DEER MANAGEMENT

STORY AND PHOTOGRAPHY BY DAVID MORELAND, DEER STUDY LEADER

A doctor examines a sick person and from his examination makes a diagnosis. The doctor will then, from his conclusion or diagnosis, prescribe the treatment necessary to correct problems. If one is confident that the doctor is correct with his analysis, the individual will probably take his advice. If one is not so confident, then a second opinion may be in order. Good wildlife management follows a similar protocol.

Deer management is not an exact science. There is no simple cookbook formula for managing a deer herd and producing quality, healthy deer on an annual basis. Deer management involves managing both the habitat and the herd. It also involves managing hunters, which is sometimes the most difficult aspect of the job. Hunters and deer biologists often don't see eye-to-eye when it comes to managing deer. Hunters sometimes seek a second opinion if they don't like what they have been told by the biologist. There are even those occasions when biologists don't agree with one another and the hunter must decide what direction to pursue.

I was contacted in 1992 by a landowner concerned about the deer program on his land. He had already met with one biologist who had examined their past harvest records and had given the landowner his diagnosis of the situation. This biologist's recommendations were as follows: Stop shooting does and protect them for three to five years; this would maximize the population and allow the herd to take advantage of the logging that had recently been done on a section of timber. The buck harvest could increase to as much as 80 to 90 bucks by 1995 (91/92 harvest was 50); hunters should only shoot bucks with 6 or more points if a quality buck program was desired. Allow the deer population to reach carrying capacity and by 1997 the deer population would be about 800, or 1 deer per 9 acres. At this point an annual harvest of 100 bucks and 100 does could be achieved.

The above photos depict the growth and development of a pen-raised deer up to the $3^{1}/_{2}$-year age class.

The landowner wasn't sure this would be the best management scheme so he sought a second opinion. I told him I would look at his data and would like to do a browse survey on his land. In order to correctly identify problems and needs both habitat and herd should be examined. All habitat is not the same, consequently the quality of deer varies from one habitat-type to another. Table I shows just how much weights may vary from one habitat to another. Habitat determines maximum potential growth on a particular tract of land.

Age and growth studies are an important part of wildlife management work, especially with deer. We are all familiar with age and growth studies. At the time of birth a baby is weighed and measured. From that time on the child is weighed and measured on each subsequent visit to the doctor. This information is used to determine the growth rate of the child as compared with other children the same age. Just as the doctor needs this information, so does the deer manager need information concerning the growth and development of deer harvested on a tract of land.

Many clubs keep records of the number of deer killed and the number of antler points but this information doesn't help much with an age and growth study. The age of a deer can only be determined from tooth wear and replacement. This is done by examination of a lower jawbone from each deer harvested. A club must keep accurate harvest records, including a lower jawbone from each deer. Only when weights and antler development can be correlated with age can an accurate evaluation be made.

Table II shows the growth and antler development of the deer herd on Jackson-Bienville WMA. As shown by the table, fawns more than doubled their weight by the following year. This is exactly what the text book says should happen. Yearling bucks increased their weight by 45 percent. Three-year-old bucks were 20 percent heavier than the 2 1/2 year old bucks.

Maximum age and growth is achieved only through proper management of the habitat and herd. Habitat management is key to providing the nutrition deer need to achieve good growth. Herd management is key to ensuring that the habitat can provide this needed nutrition 365 days a year. A given piece of habitat will only support so many healthy deer (carrying capacity). If deer numbers exceed this magic number, problems develop. The physical condition of the deer deteriorates, reproduction declines and the herd is readily susceptible to disease and parasites. The habitat also deteriorates as the deer over-browse the range. Some plant species may be eliminated from the habitat and regeneration of other species is poor due to the heavy browsing. When trying to manage a deer herd to produce quality animals, it is best to keep the deer numbers well below the carrying capacity of the habitat. Either-sex (doe) hunting is the only way to accomplish this.

A browse survey is an important part of deer management. This survey will reveal what habitat-types are present along with availability and utilization of browse species. While the survey won't reveal exact deer numbers present on the land, the measured utilization will give an approximate idea of population size. Heavy browsing of preferred plant species, browse lines and lack of plant regeneration are some of the indicators that point to high deer numbers.

I conducted a browse survey on the land in question and found high utilization of preferred plant species. The preferred plants being heavily eaten included dewberry, blackberry, rattan vine, and smilax. Browsing on herbaceous plants growing along roadsides and trails was also high. Of the 25 woody plant species found in the browse transects, 17 were being eaten. Overall browse availability was low due to a closed forest canopy. There was one section of timber that had been selectively cut two years earlier. This site was producing good browse, which was heavily used by deer. More timber cutting was needed to improve browse conditions. Without further logging there was no way I would recommend not shooting does. The habitat would not support one deer per 9 acres.

My recommendation for this herd was as follows: Improve habitat conditions by managing the timber through periodic cutting and thinning. Do not stop shooting does. In fact, increase the antlerless harvest and try to harvest a minimum of 50 does. Initiate a selective buck harvest program that involves passing up young 1 1/2 year old bucks and harvest the older age classes of bucks.

The goal of the landowner was to improve the quality of bucks. My recommendations would allow younger bucks to move into the older age classes and the doe harvest would provide hunters with meat for the freezer while keeping herd numbers in line with the habitat's carrying capacity.

The landowner elected to follow my recommendations. The 1993-94 season was their second year of participation. Table III shows the results of this past season.

The club has done well in two years but there is still room for improvement. The growth and development obtained thus far is not the maximum a well managed bottomland hardwood forest is capable of achieving. Only with continued use of the prescription will the problem be corrected. ■

TABLE I

Average Live Weight* for Male Deer on Different Habitat Types in Louisiana

Habitat Type	1 1/2-yr. Male	2 1/2-yr. Male	2 1/2-yr.+ Male
Delta Bottomland Hardwood	143	187	243
Mixed Pine-Hardwood	126	185	228
Mixed Hardwood-Swamp	126	174	160
Pine Dominant Timber	107	131	154
Longleaf Pine/Hardwood	101	130	135
Swamp/Marsh/Spoilbank	96	126	137

*Whole weight of deer in pounds

[1] Table derived from deer harvested on public land, 92/93 deer season

TABLE II

Age and Growth - Male Deer - Jackson-Bienville WMA 1993-94

Age	Live Weight	# Points	Antler Base Circumference	Main Beam Length
6 month	56	nubbins		
1 1/2	126	3	2.1	5.6
2 1/2	183	7	3.9	15.6
3 1/2+	220	8	5.0	17.8

TABLE III

Statistics of Male Deer

Age Class	Live Weight	# Points	% Male Harvest
6 month	60	nubbins	4
1 1/2 year	123	5	7
2 1/2 year	146	7.6	67
3 1/2+ year	175	8.8	22

OTHER DATA

Total Antlered Harvest = 32
Total Antlerless Harvest = 46
Deer Harvest per acre = 1 per 83 acres
Largest Buck Harvest = 185 lb., 10 point, 15" inside spread

It's Squirrel Season Again!

BY DOYLE L. ADAMS

Squirrel hunting is, without question, the number one hunting sport in Louisiana. More hunters pursue Louisiana's abundant squirrels than any of our many other game animals or fowl. Moreover, squirrels are to hunting exactly what bream are to fishing. This is where the novice invariably begins. Every hunt has made a story and every story has left a thrilling memory.

This writer recalls, with more than a little fondness, the experience of teaching his three daughters and son to hunt ol' bushy tail; recalling, too, the vibrancy in the voice of the middle daughter when she told of the surprise on the male coach's face the Monday after opening day. She proudly told him she had bagged four, when he had only brought one out of the woods.

LDWF file photo

Squirrel hunting is for everyone, being a great training ground for youth who express an affection for the outdoors and a return "full-circle" for the older hunter whose stamina no longer equals the ardors of the duck marsh or the deer stand.

Personifying this recreation is 28-year-old Tracey Weems of Mangham. Weems, who moved to Richland Parish two years ago, had lived and hunted squirrels in Madison Parish in and around the Tensas River National Wildlife Refuge (TRNWR) for 20 of his 28 years

"I love hunting cat squirrels because they are so much harder to hit than an old slow fox squirrel," said Weems, referring to the gray squirrels that proliferate in the Tensas River hardwood bottoms.

Reflecting on the harder-to-hit gray squirrels, Weems tells of the first time he took his father-in-law to family-owned woods joining the TRNWR. "Mr. Tommy Lowery bragged about being a good squirrel hunter, but had never really gotten into a bunch of cat squirrels. The first time I took him to Madison Parish he shot 19 times and killed two squirrels. He met up with Mr. Bill Zeigler, a good friend who was on the hunt with us. 'I believe I'm trying to shoot them too far away', he told Mr. Zeigler."

Lowery was not shooting the squirrels too far away. He simply was not used to shooting at such fast moving targets, Weems recalled.

The technique used by this hunter may be the key to being successful with gray squirrels. "The slower the better," he says. Making nearly every outing fruitful, Weems notes that he learned from woods-wise men who spent much time with him in his earlier years teaching him to quietly and slowly move through the woods.

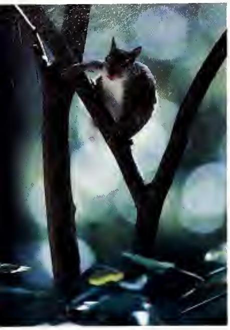
Furthermore, Weems declares that when one squirrel has been bagged in an area, it is not advisable to pick up and move immediately to another section of the woods just because the gun made a loud noise. "Most likely," he says, "there are two or three other squirrels right there looking at you, so just be quiet and let them begin moving again."

Hunting in the Tensas swamp and similar territory will call for checking the pecan trees in early October, and moving to the nutall (striped) and willow leaf (pin) oak trees later in the season. This, according to Weems, is the pattern of ripening of the mast crops and is followed by the game.

Hunting private lands, this outdoorsman will occasionally use a whistle squirrel call. "I use the call under two circumstances. states Weems. First, if by mid-morning I keep hearing squirrels bark at a distance and when I get there they have hidden and will not move, I blow the call. The other situation develops on cloudy days when it seems they just are not stirring. All it takes is a couple of whistles with that call and maybe rapping a palmetto for a little quick noise. Then just stand still and watch the action."

Having two decades of experience hunting bushy tails behind him, Weems had advice to offer families with children who show an interest in outdoors sports. He staunchly maintains that a responsible adult should take a child hunting and actively teach him or her how to hunt. Often, he says, an adult will take a child hunting and

Squirrel hunting is a training ground for youth who express affection for the outdoors and a return "full-circle" for the older hunter whose stamina no longer equals the ardors of the duck marsh or deer stand.



LDWF file photos

Gray squirrels, left, never seem to stay in one spot and provide the most challenge to both young and experienced hunters. The fox squirrel, right, is larger and less prone to bolt at the first sign of a hunter.

simply tell the child to go down a certain trail and look for squirrels.

"This is not the way to teach a child to hunt squirrels or anything else. Stay with the youngster, or even an older novice who wishes to learn the sport. Teach him safety, first and foremost, and show him what to look for, and where to find squirrels. Teach the beginner about squirrel foods, how to look for cuttings and signs that squirrels have been digging in the leaves and topsoil for fallen mast. If left alone, the youth will become discouraged and give up," Weems said.

For the hot days of October, our expert also gives hunters a warning about snakes. Especially in the Tensas River hardwood bottoms, there are plenty of rattlesnakes and moccasins. According to Weems, rattle snakes love to eat squirrels.

On more than one occasion, he has shot a squirrel out of a tree and walked over to where the animal fell only to find that one of the large reptiles already had the squirrel in his mouth. He notes, the hunter and the snake may be approaching a fallen squirrel at the same time.

"Watch the ground when approaching a freshly shot squirrel, and be careful when reaching to pick it up," Weems said.

Further illustrating the taste rattlesnakes have for squirrels, the outdoorsman tells of seeing three squirrels in the same tree, each frantically barking. Moving closer for a better shot, he watched one of the squirrels slowing come down the tree trunk to about two feet from the ground, continuing to bark. Moving still closer, he heard a ringing sound and saw a rattle snake coiled at the base of the tree.

Primarily a shotgun hunter, Tracey Weems recommends maximum strength shells with a no. 6 shot size. His philosophy, "You need those good long-brass shells to reach out and get him."

What to do with the game taken on a hunt? "Fry the young, and smother the older ones in gravy, or make dumplings out of them," he says. A tasty jambalaya is yet another option.

Across Louisiana this October, there will be enough room for all squirrel hunters who will hunt safely. Children and youth, adults alike will be electrified with excitement waiting for that first foray into the squirrel woods.

Go...Good hunting and good memories.

Editor's Note: There are two species of squirrels found in Louisiana: the gray squirrel (*Sciurus carolinensis*) and the fox squirrel (*Sciurus niger*). Both have several subspecies.

Subspecies of the gray squirrel are the common southern gray, found throughout the state, and the bayou gray or "black cat squirrel" generally limited to the Atchafalaya Basin, the lower Mississippi delta and bayous of southern Louisiana.

The larger fox squirrel has three subspecies. The Bachman's is found only east of the Mississippi River in the southeast Louisiana terrace lands. The smallest of the three, the delta fox squirrel, is found along the Mississippi, Tensas, Ouachita, Atchafalaya and Red River bottoms.

The largest of all Louisiana squirrels, sometimes weighing more than 2 pounds, the big-headed fox squirrel is confined to northwest Louisiana uplands and southwestern terrace lands.

BRINGING BACK BOBWHITE

LDWF file photo

BY FRED KIMMEL, BIOLOGIST

Bobwhites have long been a familiar component of the rural Louisiana landscape. Generations of hunters have thrilled to a startling covey rise on a frosty December morning. Others have looked forward to the familiar "Bobwhite" call resounding across fields each summer.

Unfortunately, these scenes are not as common as they were a generation ago. Bobwhite populations throughout the United States and particularly in the southeast, have been declining for the last 30 years. Published data from the North American Breeding Bird Survey, indicate that among 28 states where Bobwhites are common, long-term (1966-1991) declines occurred in 22 states. Only one state, Wisconsin, showed a long-term increase. In no southeastern state has the decline in Bobwhites been as severe as in Louisiana. Among the southeastern states, Louisiana had the highest long-term population decline at 5.3 percent annually.

Perhaps not coincidentally, the population trend among several species of birds that occupy similar habitat as Bobwhites is down as well. Of 13 such species of songbirds in the shrub/grassland guild, more than 50 percent exhibited declines similar to Bobwhites in 23 of 26 states, according to the breeding bird survey. In Louisiana, six of 11 of these shrub/grassland songbird species common to the state, showed long-term declines from 1966-91.

The first question that arises when Bobwhites are discussed is, "What happened to all the quail?" As is usually the case with wildlife, there is no single and simple answer. However, it is unlikely that the fault lies with coyotes, fire ants or any of the other culprits which have at one time or another been saddled with the blame of eliminating Bobwhites from the Louisiana countryside. The answer is as complex and diverse as the changes that have occurred in agriculture, forestry and society at large in the last 50 years. Modern mechanized farming characterized by extensive acreage of a single crop, the absence of hedgerows, closely mowed ditches and roadsides and heavy pesticide applications have significantly reduced or even eliminated Bobwhites in the major agricultural regions of Louisiana. Modern forestry practices, including short rotations, densely stocked pine plantations, decreased use of controlled

Photo by Fred Kimmel

Good quail habitat requires a relatively open understory that provides cover while at the same time offering food from seeds, insects and vegetative forage. The sparse vegetation also enhances the bird's ability to travel through cover.

burning and elimination of hardwoods in stream bottoms have reduced the quality of Bobwhite habitat in the forested uplands. Livestock management practices that result in overgrazing of woodlands, and use of cool season or sod forming pasture grasses have also reduced Bobwhite food and cover. Throughout the Bobwhite's range increased suburbanization has eliminated habitat for all types of wildlife. What was once productive Bobwhite habitat may now be a subdivision, trailer park or shopping mall.

As if deteriorating habitat wasn't enough, the decade of the 1980s was one of the driest on record. Drought has been correlated to decreased Bobwhite productivity and its effect may be amplified when habitat is poor or deteriorating.

With all these trends working against Bobwhites it might seem that the prospects for restoring the Bobwhite to its former abundance are bleak. In reality, prospects for such restoration on a regional or statewide scale may indeed be bleak. The good news is that Bobwhites, unlike migratory birds, are not dependent upon what occurs on farms or woodlots in Canada and the northern United States. Since Bobwhites are not migratory and generally do not range far, there is no reason a landowner or group of landowners cannot increase Bobwhites on their own and adjoining land. A habitat management program which considers the year round needs of Bobwhites can do just that.

Whether a Bobwhite lives in a north Louisiana pine forest or on an Acadiana farm, its basic needs are the same. Food is an obvious requirement and, depending upon the time of year, comes in three forms: seeds and mast, insects and vegetative forage. Seeds and mast are utilized all year as they are available. Insects, which are especially important to females during the breeding season and to growing chicks, are used primarily in the late spring, summer and early autumn. Leafy green vegetation is used primarily in early spring following "green up".

Cover is another essential element which must not be overlooked. Often ideal quail habitat is pictured as fields of grass. Bobwhites, however, need much more. Woody cover such as that found in hedgerows, stream bottoms and sapling thickets provide essential escape and loafing cover. The woody species which provide this cover often produce important foods as well. Nesting cover is usually 1-2 year old growths of grass and other herbaceous vegetation, often near a road, fireline or other opening. Cover should be distributed throughout the habitat, rather than in isolated pockets.

Oddly enough, bare ground is also an important element of Bobwhite cover. Since Bobwhites are not strong scratchers, bare ground is necessary for them to efficiently pick up seeds and insects when feeding. It also enhances the bird's ability to travel through cover. Generally, good Bobwhite habitat should consist of about 50 percent bare ground evenly distributed within the vegetative structure.

Historically, farms and agricultural lands supported the highest Bobwhite populations. This is still the case in parts of the U.S., but not in Louisiana. Our agricultural areas have the highest potential for good Bobwhite populations but under current practices have the lowest populations in the state. Removal of hedgerows and "weedy" areas around fields has resulted in a lack of food and cover for Bobwhites. Bobwhite habitat improvement in agricultural lands can be as simple as protecting existing hedgerows and weedy areas or re-establishing cover where little or none exists.

A simple technique known as filed border management involves creating a perimeter 50-100 feet wide of native vegetation around cultivated land. Each year, an alternating one-half should be very lightly disced or mowed to encourage growth of desirable food producing plants and to keep the vegetation from becoming too dense. This border of native vegetation will provide nesting and escape cover in the 2-year-old growth and food in the form of seeds and insects in the newly disced or mowed portion.

The highest Bobwhite populations in Louisiana are now found in the longleaf and loblolly pine-mixed hardwood regions. These regions were once of secondary importance to the agricultural lands but, as the quality of the agricultural lands declined, the pinelands became the primary reservoir for Bobwhites in Louisiana.

Generally, the single most important factor determining the abundance of Bobwhites in pineland habitat is the frequency of controlled burning. Without controlled burning, upland pine habitat rapidly becomes too dense for Bobwhites. Controlled burning reduces rank vegetation and maintains the open understory and bare ground favored by Bobwhites. It encourages the growth of preferred food producing plants such as partridge pea, beggar tick, and other legumes. Insect production is also enhanced in burned areas.

Controlled burning of pinelands for Bobwhites should be conducted at least once every two years, and preferably every year, especially in southeast Louisiana. Late winter is generally the best time to burn, but growing season burns are sometimes needed to control invading woody vegetation. Of course, controlled burning should only be conducted when weather conditions are suitable and under the supervision of experienced personnel.

In conjunction with controlled burning, frequent thinning of pine stands will greatly enhance Bobwhite habitat. Many pine stands are too densely stocked to allow growth of high quality cover and food producing plants in the understory. Thinning to open the stand and allow the herbaceous understory to flourish will improve food and cover conditions for Bobwhites. A basal area of 30-60 square feet per acre is ideal, but with good management Bobwhites can do well in stands approaching 90 square feet per acre.

Often, one of the first things landowners want to do for Bobwhites is establish food plots. Food plots alone will not bolster Bobwhite numbers, but when incorporated into an overall habitat improvement program food plots can improve conditions for Bobwhites and other wildlife. A food plot containing a mix of annual seed producers consisting of 2 pounds of browntop millet, 1 pound of Japanese millet, 2 pounds of Kobe lespedeza, and 6 pounds of Egyptian wheat, can produce excellent results. Care should be taken not to seed the plot at too high a rate. For instance, the seeding rate often recommended for browntop millet is for hay production and is much too high for a good wildlife plot. Since good seed production is desired and Bobwhites need bare ground, a planting rate of 10 pounds per acre of the mix is about the maximum rate. An important benefit of properly planted food plots is the excellent brood rearing habitat created in the resulting open stand. Remember, food plots do not have to look like a well manicured garden. Invasion by native "weeds" is expected, and in most cases desirable since they also provide food and cover.

Perennials or reseeding annuals such as thunberg lespedeza and partridge peas also can be used in food plots or strips. These plants provide good food and cover, are resistant to fire, and do not need to be replanted every year. The initial cost of the seed is higher, but the cost is minimal when annualized over the life of the plot.

Fallow discing is an inexpensive and very effective way to improve Bobwhite habitat. Fallow discing involves lightly discing strips or small plots and then allowing native vegetation to prosper. No effort is made to plant the disced ground. A good seed bed is not necessary and one pass of the disc is usually enough. The disturbance caused by discing encourages growth of plants such as partridge pea, goatweed, vetches, and other desirable vegetation. The discing also helps control rank vegetation and creates good brood rearing habitat. The frequency of discing is dependent upon the fertility of the site. As a rule, the area should be redisced every two to three years, or when it is apparent that the desired vegetation is diminishing. Fallow discing can be done whenever equipment is available, but research conducted on Sandy Hollow Wildlife Management Area indicates that discing in late winter provides the greatest benefit, at least in the upland pine regions. In hilly terrain, disced areas should be situated to minimize erosion problems. Fallow discing can be incorporated into a controlled burning plan so that the disced strips can also be used as fire lanes.

As you can see, improving habitat for Bobwhites requires frequent manipulation of habitat to maintain early successional vegetation. While not necessarily difficult or expensive, it requires planning and a firm commitment to actively manage the habitat. However, the rewards of once again hearing that familiar "bob-Bobwhite" whistle and seeing a covey return to the "back forty" will make all the planning and work worthwhile. The Louisiana Department of Wildlife and Fisheries provides technical guidance to individuals interested in improving habitat for Bobwhites and other wildlife. Contact the Upland Game Section at 504/765-2352 for more information. ■

Watching a favored dog stalk Bobwhites is one of the most enjoyable aspects of quail hunting. Making improvements to available habitat may help ensure that Louisiana hunters can continue to experience that joy.

Photo by Bob Dennie

are you using your decoys effectively?

BY CHARLES FRANK

Wind, tide and temperature affect the skilled use of the decoy. Placement of the "stool" can dramatically change the flight path of migrating waterfowl.

The proper use of decoys can materially effect your pleasure in the duck blind and no one understands the nuances of the strategic placement of these lures quite like south Louisiana Cajuns.

While each area in the United States has variations in the styles and materials used, our hunters were and still are more self sufficient than those in other sections of the country. The relationship between guide and hunter is more camaraderie than an employer/employee relation and there are many more Louisiana hunters who prefer to "push their own pirogue." This has resulted in the selection of lighter woods and a smaller rig of decoys than a "northern sport" would be apt to select. After all, he expected a guide to carve and place his decoys, and pick them up when the hunt was completed.

LDWF file photo

The use of decoys is a uniquely North American creation. It is one of a very few crafts that originated in the new world and gravitated to Europe — a reversal of what we are traditionally lead to expect.

About a thousand years after the birth of Christ, an Indian hunter watched Canvasback ducks circle eel grass beds in a quiet pond. Soft fall breezes caressed limpid waters. As the flocks settled on the pond, he no doubt cursed the gods of the hunt for their fickle interference with fate. The ducks were out of range for his bow and arrows. As he shivered in the cool winds sweeping from the Canadian wilderness, he had a thought that was to change duck hunting forever. His innovation would lead to more than 100 factories actively involved in crafting decoys of wood, paper, tin, cork and cloth during the mid-19th to early 20th century.

Quietly slipping away from the flock of cans noisily feeding in the center of the pond, he returned to his village to construct decoys of reeds and feathers.

The Tule Indians, predecessors of the Northern Piutes, were a tribe of advanced hunter/gatherers living in the Midwest. In 1924 archaeologists exploring the Lovelock Cave in Nevada found a reed basket filled with decoys made from bound and woven tule, multi-colored and adorned with feathers of the canvasback duck. Only tool making is an older art form than basketry. This has been described as "the mother of crafts arts in form, use value and decoration, with ornament of red (woodpecker) and white (duck) feathers, quail tips, abalone and clam shell pendants." These were the first records of decoy use in the New World.

Wind, tide and temperature all affect the skilled use of the decoy. Placement of the "stool" can dramatically change the flight path of migrating flocks of waterfowl.

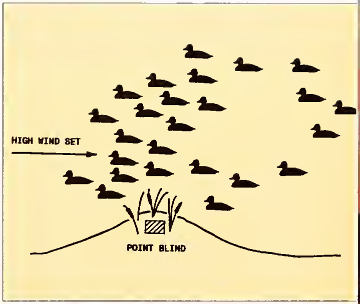
From the Tule Indians to the contemporary "experts", nothing has really changed.

Place your decoys grouped by species, remembering that puddle ducks are more wary and will generally alight outside your spread. Place your mallard or pintail decoys on the outside, your diving ducks on the inside. Less wary, and more prone to rafting, the divers will seek a spot in the midst of your spread and much closer to your blind.

I personally prefer the majority of my rig favor hens: at least six hens to four drakes. Manufacturers split the mix 50/50, so I suppose the majority of requests are for this split.

Anchor lines should be no longer than and the anchor weight no heavier than necessary to keep decoys in place. Nothing will frighten ducks more than decoys knocking together in a strong wind or overturned, lightly anchored decoys can be very frustrating—drifting into a pod that attracts ducks well out of gun range. The anchor line should blend with the bottom of the pond you're hunting. Monofilament can reduce tangling and blends well with any bottom color.

Blinds should be constructed whenever possible with the wind to your back. If the pond is large enough, several blinds should be constructed to take advantage of prevailing wind on the day of your hunt. Since Louisiana is basically a flat land, blinds that hug the contour of the marsh are less apt to cause incoming flights to flare. Pit blinds and reed blinds are most effective where the surrounding grasses and reeds can be combined to blend with local foliage.

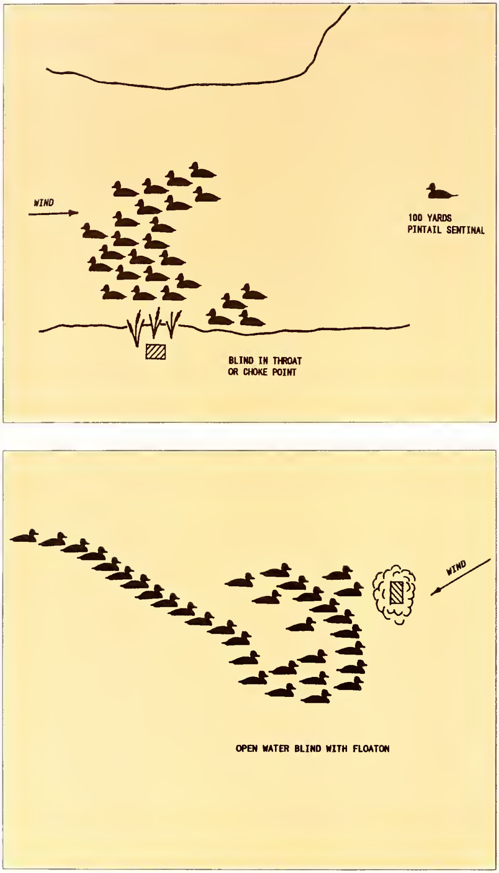


Open water species such as Widgeon and Gadwall often decoy well to an open hole in a set of decoys. In the above illustration, incoming birds would be flared for landing right in front of the blind.

I prefer decoys with a low head position. This is the "at rest" position. Raised heads are indicative of an alert flock getting ready to fly away. An occasional pintail sentinel with high neck placed outside gun range can occasionally be used to good effect. Additionally, an occasional tip-up in shallow water can lure puddle ducks into thinking the flock has found feed. A variety of poses will increase the lure of your spread since this is a normal positional aspect for a flock at rest. Only when alerted and getting ready to fly off does a flock assume an identical pose facing into the wind.

Placing your anchor line to the rear on some of your decoys will accomplish this even if all of your decoys are straight ahead models with no turned heads.

With these basics established, let's consider the use of various sets and camouflage of the hunter. The hunter must consider the exceptional eyesight of waterfowl. Flying at speeds of as much as 50 miles per hour, the Canvasback duck can spot movement and veer away from a blind at distances that never cease to astound me. One old hunter, Mitchel Lafrance, once told me, "You brakes them birds with your feet." What he taught me was the value



A semi-circular set, top, involving decoys of several species often works well in a marsh. Incoming ducks would be drawn to alight in the opening to the rear of the set. The "J" or hook set, bottom, is often effective for luring Scaup and other species into the curve of the hook.

of setting your body at the angle that allowed you to swing without tension in either direction as ducks approached. Once set, he never moved until the birds were inside gun range. His move was then quick and decisive. The microsecond that a shot string has to reach the target leaves little room for error and the old man frequently commented that a sport "shot well, just didn't hit much."

Let's consider now the importance of camouflage. Ducks are more affected by an intrusive blind and by motion than by the color of a hunters clothes. Sportsmen who learn to remain perfectly still when ducks are coming in are often astounded when their exposed position is ignored. Many a Cajun hunter still enters the marsh in blue jeans and a chambray shirt.

The big detail is placement of a spread of decoys. I like a good basic spread in a sweet water marsh of a dozen teal, a dozen mallards and a dozen or more Coot. Placing the decoys to cover an area of no more than 30 yards in diameter, the coot are positioned closest to the blind, the Teal to one side, and the Mallards a bit further out. Occasionally a pair of Pintail sentinels placed outside gun range seem to act as a confidence builder, luring flights to the main spread.

Several patterns seem to work wonders with different species. The Blue Bill (Lesser Scaup, or Dosgris) is particularly attracted to the "J" or hook pattern. Setting a string of Dosgris decoys in this conformation with the shank of the hook into the wind, the cup of the pattern seems very effective in attracting a band to follow the shank, whiffling as they settle in the throat of the set.

Another exceptionally successful pattern for Widgeon (Zan-zan) and Gadwal (Grey Ducks) is open hole in a roughly circular set. Both of these species respond well to the call and, for this reason, are a favorite target for the less experienced hunter.

Pintails are a high flying, late morning arrival. Many a day I've filled a short bag by waiting till most hunters have departed for the clubhouse. Coming in on a strong nor'wester, they will drop like a bolt to the Pintail whistle. Remember to use your calls discreetly. Pintail and Widgeon in particular need only the softest call.

The Ring-necked Duck is a favorite when the winds are howling and white caps ruffle even the smallest pond. The sound of air streaming through flight feathers is one you'll never forget. It's a roar, not a whisper. And speed? Those babies seem to fly faster with each passing year.

The larger the pond or lake the more important a large spread of blocks becomes. Old friend Joe Bishop who hunted one of the large abandoned rice fields at Simoneaux Ponds near Des Allemands, used as many as a hundred Ring-necked and Coot decoys. His raised platform blind was surrounded by water hyacinth "floaton" held in place by wire and stakes. The blind itself was covered in roseau cane and large branches of evergreen wax myrtle or mung were stuck in the soft swamp close by. This seemed to create a marsh island that matched clumps of wax myrtle around the edge of the pond and surrounding swamp.

In contrast, the pothole hunter who seeks the Black Mallard or the Mottled Duck, will have best results with no more than a half dozen decoys. His best blind is a pair of chest high waders and a seat on the edge of a pothole. Needle and cord grasses can be pulled up to make him invisible from just a few feet away.

It is one of my biggest pleasures to outwit these birds. The Mottled Duck usually fly in pairs and seem hell bent on going in a straight line from one point to another. Getting them to deviate takes real skill on the duck call and a perfectly hidden hunter.

Confidence decoys take several forms. The silhouette of an American Egret or Great Blue Heron reassures the incoming flock that no hunter is near. A crow decoy is equally effective.

On some bluebird days, everything you try seems to no avail. The few ducks you see are passing high overhead bound for open water and beds of widgeon and eel grass in the shallows. Here is your chance to try the feeder. Firmly anchor a single decoy in the midst of your spread. Now place another anchor nearby with a line attached and pass the line through an eye in the base of your decoy. Take the bitter end to the blind and give a gentle tug or two when high flying flocks are in view. Ripples from this "feeder" often prove to be the skilled touch that brings the flock down.

On occasion, a cross wind can be frustrating. When faced with this condition, place the bulk of your spread to windward, leave a space in front of your blind and place a few decoys to leeward. This is a variation of the hole pattern frequently used with diving ducks. Divers tend to raft and the hole pattern encourages them to find safety in the raft and encourages them to believe they are heading into the midst of a feeding flock.

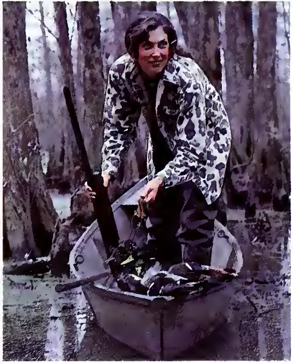
Oversize decoys used on the outside of your spread are helpful in attracting ducks from a great distance. Old timers used this ploy to deadly effect in the heyday of market hunting, proving again that little has changed.

If your set isn't attracting well and you have downed a few coot, cut a couple of reeds and stick them in the coots' necks to support this most natural decoy. Wind ruffling the feathers adds an additional dimension to your spread.

Goose decoys can be as simple or as elaborate as you want them to be. Quantity seems to be the most effective factor. Silhouettes, newspaper held in place with a clump of marsh grass, or pieces of white cloth on the ground with an occasional flag waving just above the grass seem equally effective. Here again, if you lack the luxury of a pit blind, lying still and patiently among a spread of white toweling can bring flocks of snows, blues and specs out of the clouds on their morning flights to sandy Gulf beaches or on their evening return to rice fields.

A word about species preference. Coykendall pointed out almost 50 years ago that "ducks will stool to decoys of some other kind. Wood Ducks will stool to Mallards, Ringneck to Bluebill."

LDWF file photo



Pirogues are an effective method of getting into the shallow, marshy areas ducks often favor.

A good duck hunter will study the flight path that migrating flocks follow on his lease. Look for a choke point or a spot where converging flight paths seem to be crossing one another. Year after year I've learned that an old lease retains a subliminal pattern in the mind set of returning flocks.

Our hunting is affected by the quality of our decoy set. Larger, heavier, flat bottomed decoys that ride more realistically will out perform light plastic birds. Puddle ducks are prone to be high in the breast, diving ducks are lower in the rear. Passing waterfowl will tend to be more attracted to these characteristics than to the species.

In the end, little has changed since that Tule Indian wrapped his reeds and adorned them with Canvasback feathers. The ducks are fewer and the limits are lower, but the secrets of luring them into range remain constant. ■

Photo by Sara Ann Harris

DECODING SECRETS OF LOUISIANA FISH

BY SARA ANN HARRIS

Grande Terre Island arcs across the opening of Barataria Bay at the southern-most sector of Jefferson Parish and backs up to the wave action of the Gulf of Mexico. From this barrier island, there is easy access to interlacing lagoons, lakes, bayous and bays of the coastal marshes, as well as to the open sea. In searching for a locus from which to investigate the dynamics of Louisiana's coastal fisheries and ecosystems, one could not pick a more ideal outpost.

The Department of Wildlife and Fisheries recently resurrected such an outpost on 126 acres of high ground on the western portion of Grande Terre Island. Following several years of minimum operation due to financial setbacks, the Lyle S. St. Amant Marine Laboratory was brought back on line in the summer of 1993.

Laboratory Director Claude Boudreaux explained that the lab's priority is research on marine finfish populations in Louisiana waters. It is not uncommon for fish species to exhibit local characteristics and adaptations based on the environment of a given state, Boudreaux said. The best fishery management plans are drawn from local, current and extended research. With the reopening of the lab, the Marine Fisheries Division has embarked upon just such research projects on Louisiana finfish.

The most exciting project requires deciphering microscopic messages deposited on fish ear bones (otoliths) using state-of-the-art technology. The Age, Growth and Fecundity Study on Spotted Seatrout and Red Drum in Louisiana Waters got underway in January 1994. LDWF marine fisheries scientists are setting up a project at Lyle S. St. Amant Marine Laboratory that promises to thrust Louisiana's management of marine finfish into the 21st century.

In the long run, the research project will enable scientists to answer questions critical to good management of the two species in Louisiana with a far higher level of confidence, explained Project Study Leader Dr. Glenn Thomas. Questions such as: How many new fish of a given species enter the fishery each year on Louisiana's coast? — a factor referred to as recruitment. What is the mean size of a red or a spec at a given age? On the average, how much will each species grow in its first year? Its second year? In its third year? What, then, is the fish's rate of growth?

Questions on fecundity or reproductive capability will also be answered, Thomas said. How old is a spec or a red when it begins laying eggs? How many eggs does a certain aged fish lay at each spawn? How many times does she spawn during a single reproductive season? How many total eggs will she lay in a season?

The starting point of the Age, Growth and Fecundity Study on Spotted Seatrout and Red Drum in Louisiana Waters is collecting samples. Every month seven marine fisheries crews collect fish at selected sites coastwide using trammel nets, gill nets and seines of designated mesh sizes. For this study, scientists extract a pair of otoliths and a pair of gonads (reproductive organs) from specs and reds at dockside, record needed data on the fish, and route the specimens and the data to Lyle St. Amant Marine Lab.

Marine Fisheries Specialist Julie Lightner said that as of June 17, 1994, she had recorded receipt of specimens from 901 spotted seatrout and 778 red drum at the lab.

Louisiana State University Coastal Fisheries Institute has operated a finfish age lab using otoliths for nine years and has been instrumental in developing the base of operations for this marine finfish study. Extracting and handling otoliths requires precise and rigorous techniques. Thomas and Lightner completed a month long training session at the Institute to learn the fine points. They were also acquainted with the existing literature on otolith and reproductive research.

The fish otolith, a flint-like substance found in the fish's head that functions to balance the fish, is the single critical component of the research project. Analysis of the microstructure of the otolith was compared by one researcher to decoding Egyptian hieroglyphics on a stone tablet. The tablet and the otolith both contain a wealth of interesting information, but to read it the investigator must learn to understand what the "inscribed" marks mean.

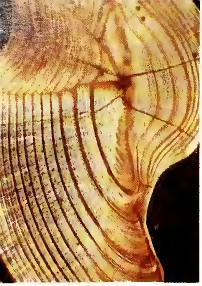
To prepare the otolith for examination, it must be embedded in a small plastic cube. The cube is sliced with an extremely precise electric saw. What is needed is a plane that includes all increments of the otolith's microstructure. "The slice must cut across the core, the point of otolith generation at embryo age," Lightner explained. "There is only one correct slice." Lightner immediately mounts the sample on a glass slide, then sands and polishes it using ultra fine compounds.

Photo by Sara Ann Harris

Marine Fisheries Specialist Julie Lightner extracts an otolith, or ear bone, from a spotted seatrout for examination. One researcher describes this data-packed bone as the "CD ROM of the fish world."

Basically, scientists have discovered that protein deposits are made each year on the otoliths during slow growth seasons. The deposits form dark rings or annuli, similar to the growth rings of a tree, that can be counted to determine the age of the individual fish. Transparent rings between the annuli represent the warmer months or growth period. Estimates on the fish's age are initially made directly at the microscope, but the ground-breaking work is being made possible by a computer micro-imaging system — 1.2 gigabytes worth.

The system involves a video camera attached to the scope which transmits an enlarged image of the otolith section onto a color computer monitor. Installed with Optimas Image Analysis, software adapted by marine fisheries scientists to help decipher the secrets of the otolith, the computer can carry out programmed calculations on the specimen. Exact number and size of annuli, characteristics of the final annuli edge,



Coastal Fisheries Institute photo

Photo by Sara Ann Harris

Computer assisted image enhancement of the otolith or fish ear bone, top. This technology is thrusting the study of fish age and growth into the future. Marine Fisheries Field Biologist Randy Pausina, above, removes gonadsfrom spotted seatrout to determine the population's reproductive capability.

and quality of transparent rings can be determined very rapidly. At the completion of the desired functions, the image and the data are stored for interpretation. Using this technology, investigators hope to better understand the delicate relationships between fish growth and environmental factors.

The age and growth work will be correlated with the reproduction work. "In this first year," Dr. Thomas explained, "we are preserving the gonads and sending them to LSU Coastal Fisheries Institute. Researchers there will examine the reproductive organs, interpret gonadal development, and estimate the potential for egg production of a given fish of a given size."

The sheer number of fish being collected for this study marks it as the first of its kind in Louisiana: 1,000 trout and 1,000 red fish annually. The research is invaluable to constructing fishery management plans. Plans are designed to provide both a satisfactory harvest and a continuous natural replenishment of the species. Fundamentally, in deciding what can be removed it is best to know as much as possible about what is out there. LDWF Finfish Program Manager Harry Blanchet will incorporate project discoveries into Louisiana's current fishery management plans for spotted seatrout and red drum. "The age and reproduction research at Lyle St. Amant is hard science — the nuts and bolts. From the data collected, we will be able to construct more reliable estimators of fish populations," Blanchet said.

The project aspires to wider applications. As part of the study, LSU's institute plans to investigate the use of red drum otolith annulus patterns as a tool to separate inshore fish from offshore fish. Blanchet explained that the technology can greatly facilitate the study of other important finfish species in Louisiana waters.

Only a handful of finfish laboratories that use the latest high powered otolith technology exist in the country today. It seems fitting that at the mouth of the gigantic and complicated Mississippi River System, LDWF's Lyle S. St. Amant Marine Laboratory with the cooperation of LSU Coastal Fisheries Institute should play a leading part in the nation's endeavors to carefully and intelligently manage its marine fisheries resources. ■

Lyle S. St. Amant Marine Laboratory

The biological station was originally opened in 1958. In the early 1980s it was dedicated to the memory of Dr. Lyle S. St. Amant, the first lab director and an international authority on needs and problems related to coastal and marine resources. As part of its stated mission to investigate problems affecting the fish and fisheries of Louisiana, the lab has always held the door open to researchers outside the department. Three dormitories provide housing for 40. There is a laboratory building, a work shed and a dock. In the past, the 24 quarter-acre artificial ponds have been heavily used by visiting researchers.

The Soil Conservation Service has planned experiments with cord grass as a means of marsh enhancement. LSU investigators are conducting studies on Barataria Bay crabs and flounders and other flatfish. The U.S. Army Corps of Engineers uses the lab as a base for planning coastal restoration work in the area.

Other LDWF marine fisheries activities that Lyle S. St. Amant Marine Laboratory is associated with follow.

- Study the survival rates of spotted seatrout and redfish taken on rod and reel and released.
- Survey recreational fin fishermen on their harvest.
- Construct bioprofiles on commercial finfish based on data collected from commercial fishermen.
- Collect data on landings of commercial finfish.
- Experiment with collecting fish samples with traps in hard-to-get-to areas where structures prohibit traditional collecting methods.
- Survey waterbottoms leased for oyster harvest.
- Assess Louisiana's blue crab population.
- Monitor the abundance and size distribution of important commercial and recreational marine species.

POMME DE TERRE WILDLIFE MANAGEMENT AREA

BY VIC BLANCHARD, BIOLOGIST
PHOTOGRAPHY BY ANDY CRAWFORD

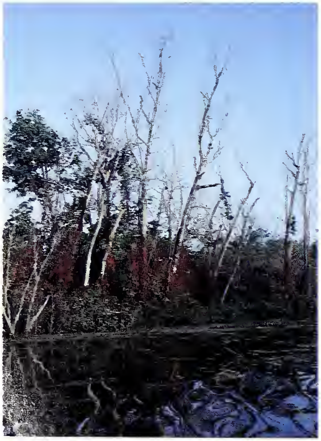
Pomme de Terre Wildlife Management Area (WMA), located in east central Avoyelles Parish, is a 7,084 acre tract owned by the Louisiana Department of Wildlife and Fisheries. The initial tract of 3,911 acres was purchased by LDWF in October 1975 with additional acreage added over the years to bring the WMA to its present size. Pomme de Terre WMA is located within the Bayou des Glaises/Big Bend levee system. Sutton Lake and de Pomme swamp serve as a catch basin for the 28,000 acre watershed within this levee system. Drainage is via a man-made canal into Bayou des Glaises and into the Atchafalaya River at Simmesport. The physical layout of the area is ridge and swale topography with the amount of standing water dictated by season and local rainfall.

The forest overstory consists mainly of sugarberry, honeylocust, green ash, persimmon, bald cypress, tupelo gum, sweet pecan, nuttall oak, water oak and overcup oak. Black willow dominates the lower elevations with the above mentioned species occurring near or on the natural ridges. Excellent browse species such as greenbriars, dewberry, poison ivy, honey suckle, and trumpet creeper are common in the understory. Open water and swamp areas comprise approximately 60 percent of the WMA and support water hyacinth, lotus lilly, duck week, cutgrass, frog's-bit, and buttonbush.

Hunters enjoy the highest use of Pomme de Terre with about 3,500 man-days of use annually, while fishing accounts for nearly 600 man-days of use. The deer population on this WMA continues to increase due to habitat management, harvest regulations and strict enforcement of wildlife laws. Average live weight of $1\frac{1}{2}$-year old bucks is 150-160 pounds with $2\frac{1}{2}$-year old bucks exceeding 200 pounds. Deer harvest during the either-sex hunt of 1993 was one deer per eight hunters, which is one of the top five ratios on WMAs.

Deer hunters can also take advantage of the sizable wild hog population on the area. In fact, some hunters favor hog hunting to deer hunting on this area.

Duck hunting ranges from good to excellent with the majority of the effort being concentrated on Sutton Lake. Major species harvested are Wood Ducks, Mallard, Gadwall,



Sutton Lake, top, is a shallow, weedy lake that offers beauty and exceptional waterfowl hunting. Duck boxes, above, have been extremely effective in maintaining high populations of waterfowl on the area. Various species of birds often are found resting in trees, at right, and around water throughout the WMA, making it a wonderful place for bird watching.

Widgeon, Green-winged Teal and Ring-necked ducks. A fair number of American Coot and Gallinules are taken incidentally by duck hunters.

Sutton Lake and Te Pomme Swamp are managed for migratory waterfowl by water level manipulations via a water control structure on each area. These structures have been in operation approximately five years and were a result of a Ducks Unlimited project. An intensive wood duck nest-box program greatly enhances production of this highly prized game bird.

Squirrel and rabbit hunting opportunities are fair to good. Most squirrel hunting occurs on the ridges, where the many thickets are prime habitat for cottontail and swamp rabbits. Following the deer season (mid-January), a 9-day rabbit season with dogs is allowed.

Turkey hunting is new to this WMA, with the first hunting season conducted during the spring of 1994. Several nice gobblers were taken in this first year with a "trophy" gobbler sporting 4 beards (9.5, 6.25, 6 and 5.5 inches) being harvested.

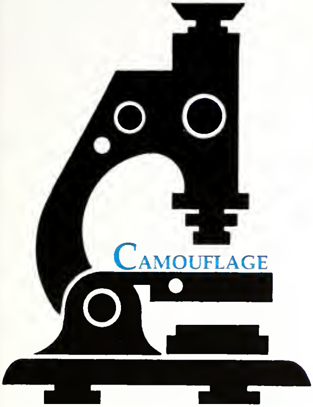
Non-consumptive users of the area have the opportunity to view many species of non-game wildlife. Mammals common to the area are raccoon, opossum, nutria, mink, otter and bobcat. Several rookeries exist on the area where one can view American Egrets, Great Blue Herons, Little Blue Herons, Yellow-Crowned Night Herons, Snowy Egrets and Green-backed Herons. Common Gallinules as well as the less abundant Purple Gallinules nest on Sutton Lake. Several species of neotropical migrant songbirds and the American alligator can be found on the area.

Fishing opportunities exist on Sutton Lake but are hampered at certain times of the year by aquatic plants. Crawfishing is allowed during a specified season and individuals are permitted to harvest 100 pounds per day.

Access to Pomme de Terre is gained via LA Hwy 451, which connects to Hwy. 1 in Hamburg. Two entrances to the WMA are found along this route. The main entrance provides users with a parking area, camping area, concrete boat launch and handicap ATV trail. The other entrance provides a parking area and access to an ATV trail. Throughout the area there are five miles of public ATV trail, with an additional 4.25 miles of trail allowed for handicapped individuals on ATVs. Additionally, several walking trails are located on the area. ■

Education Corner

A CLOSER LOOK



CAMOUFLAGE

By Lyle M. Soniat, Ph.D.
Louisiana Sea Grant College Program
Yolanda Bondi
West Jefferson High School

Now you see them, now you don't. Nature is filled with animals that are not noticed at first glance. Careful observation may change that brown twig into an insect known as a "walking stick", or that green leaf into the wings of the katydid, a type of grasshopper. Only when some movement is detected are many species discernible.

The similarity of a species' coloration with its background helps it survive in several ways. By blending in with background colors and having a form similar to its immediate surroundings, many animals can avoid becoming "lunch" for others. This is especially critical for species that have not developed other means of self protection, such as speed, size or strength. The attributes of coloration, patterning, and form have evolved as species have adapted through many generations of predator-prey interactions. These adaptations allow them to hunt, conserve energy and avoid exposure to unnecessary danger from other hungry species. These attributes are physical adaptations which may be described as camouflage.

When the tawny lioness crouches tensely in the tall grasses, it is physically camouflaged from its prey. But camouflage may be considered more than just a physical characteristic. Camouflage also includes a species' behavior. Equally important is the lioness' ability to remain motionless for long periods of time as its intended prey approaches. This is a behavioral adaptation. Both the physical and behavioral adaptations enable the lioness to remain undetected, helping it to survive and reproduce.

The attributes of coloration, patterning, and form have evolved as species have adapted through many generations of predator-prey interactions.

These adaptations are handed down from generation to generation through the genetic code. When variations in coloration or shape occur in offspring that help it blend into the surrounding environment, a particular species is likely to survive and reproduce. Genes which carry these slightly different characteristics can then be passed along to the next generation.

A species' adaptation must suit the particular habitat conditions in order to be successful. Sometimes the offspring of a species has coloration, pattern or shape differing greatly from the surrounding habitat. This young animal is likely to stand out and be noticed by a great number of predators, endangering its survival. Animals are also able to spot predators that stand out in the environment. Sometimes a brightly colored animal will starve because it cannot get close to its prey to secure dinner.

A species' adaptation must suit the particular habitat conditions in order to be successful.

A good example of this are the white alligators found not long ago in our marshes. Even the alligator needs some luck to survive its first few years, since there are many predators of small alligators, including alligators themselves. White baby alligators would have virtually no chance of escaping unseen from the numerous predators in its environment.

Some animals use the environment to camouflage their appearance. For example, rabbits and field mice use dry grasses and leaves to build their nests. This effectively protects the helpless offspring from predation. Other newborn animals may have temporary coloration, such as spots on a fawn, that helps them elude detection. As the fawn matures and is able to keep up with the doe, the spots slowly begin to disappear.

Other species such as the chameleon, the flounder, the anole and the squid can change their colors or patterns as they move to different locations. This enables them to blend with the varied backgrounds of different areas, giving them a greater range in which to seek food or shelter. The flounder can change from a solid brown color when laying on a sandy bottom to a mottled appearance when lying on a bottom with rocks or sediments. Notice how long it takes the anole to change its color after climbing from a green, leafy bush onto a brown wooden fence or tree limb.

Warning coloration and mimicry

Animals are also able to camouflage themselves through deceptive markings and shapes. In this instance, species have evolved color patterns and forms that may distract or discourage predators. Many fishes and insects have developed these types of markings. Some types of moth caterpillars have evolved to appear as bird droppings which discourages their predators. Or markings may appear as large fake eyes or false heads which gives these species an edge in escaping. A predator may incorrectly anticipate which way its prey will escape, only to end up empty handed when its meal heads in the opposite direction.

Not all species use muted colors or unusual shapes to hide. Instead, they have evolved bold patterns and bright colors that make them stand out from their surroundings, as though to warn predators against eating them. These species have developed different defenses, including toxic secretions, painful stings or may just taste bad as a means of protection.

Most predators of these species do not inherit knowledge of their prey's defensive traits, and generally learn about them first-hand with unpleasant results.

Many examples of these types of defenses exist in nature. No one who has been sprayed by a skunk or stung by a wasp looks forward to a second occurrence. Predators of the monarch butterfly leave it alone, finding it distasteful or harmful. The monarch gets its toxin defense from the milkweed that it eats in the larval stage. The poison dart frogs of tropical rain forests secrete a highly toxic fluid from their skin. Their pattern of bright colors quickly teaches would-be predators — "don't touch!"

Most predators of these species do not inherit knowledge of their prey's defensive traits, and generally learn about them first-hand with unpleasant results. The first experience is usually enough of a lesson to teach even the hungriest predator to look elsewhere for its meal. After quickly learning this lesson, an animal might spare other potential prey which looks like the offending species. While this is not classified as a camouflage defense, some species have the coloration of animals with defense mechanisms although they do not have the ability to secrets poisons or sting their predator. Many species that don't share those particular defenses, but are similar in appearance, thus benefit from the initial introduction. By looking alike, two different species gain an additional advantage as predators quickly learn to avoid prey with a similar appearance.

Another curious insect, the bombardier beetle, has developed a noxious chemical that it sprays at attackers from its tail end. This is often sufficient to deter its main predator, the grasshopper mouse, from eating it. However, as often happens with a good defense, natural selection has helped this mouse develop a more effective offense. The grasshopper mouse quickly catches the beetle, sticking the chemical-secreting tail end into the sand, and munches on the head. Yum! As prey adapt over time and employ variations of physical and behavioral defenses, so too will predators adapt to counter with more effective measures of catching them.

Even man has benefited from watching other animals. American Indians often dressed in animal skins as a means of camouflaging themselves for hunting. Soldiers use camouflage clothing to match their surroundings to hide from the enemy. And today's sportsman use camouflage to help them get closer to their game. This is especially true for bowhunters because of the shorter ranges involved. In addition to good camouflage clothing, turkey hunters may also require behavioral camouflage to be successful. The slightest movement from the hunter will cause the turkey to make a surprising rocket-like takeoff.

ACTIVITY

Through careful observation, you can find several examples of camouflage in your backyard, such as the color pattern of a garden snake or an insect that looks like a twig. See if you can find three different types of animal camouflage near your home. Remember, not all animals use behavioral or physical adaptations as defenses.

LAW LINES

Behind the Badge

BY CAPT. KEITH LACAZE

Archery Hunting Regulations

Fall signals the arrival of hunting season. Archery hunting for deer begins on October 1 and is one of the earliest seasons of the year. It is preceded only by dove and special teal seasons for general statewide hunting.

Archery hunting has gained popularity and many people have questions regarding the legalities of the sport. For the benefit of those new to bow and arrow hunting, a review of the regulations will eliminate some confusion.

The archery segment for deer extends from October 1 through January 22 in deer hunting areas 2 through 8 and from Oct. 1 to Jan. 31 in area 1. Either sex deer may be taken with a bow except when a bucks-only gun season is in progress. During bucks-only gun season archers must comply with the bucks-only restriction. The same regulation applies on management areas. Check your hunting regulations pamphlet for special restrictions on some WMA's.

Licensing requirements for archery deer hunters apply to those resident hunters who are between 16 and 60 years of age. These hunters must have in their possession while hunting, a basic hunting license as well as a big game and bow license. All non-residents 16 and over must comply with license requirements.

Equipment must be conventional bow and arrow only. Long bows and compound bows with a pull of 30 pounds or more are legal and broadhead blades must be metal and no less than $^7/_8$ inch in width. Bows may be fitted with sights, however infrared or laser sights or any sighting devices which project a beam of light to the target or otherwise electronically illuminate the target are prohibited.

It should be noted that it is illegal to carry a gun while bow hunting during the special archery season. However, archery hunters may carry a .22 caliber rimfire pistol loaded with #12 shot, commonly referred to as ratshot. It is also illegal to possess or use any poisoned or drugged (pod) arrow or any arrow equipped with an explosive tip.

Many people are confused by the restriction on mechanical releases. Any mechanical device which will draw or hold a bow at draw is prohibited. This should not be confused with hand held releases which do not assist in draw or hold and is still be accomplished by the archer. The hand held release simply attaches to the bowstring near the nocking point and allows drawing and releasing without actual contact between the fingers and bowstring. Hand held releases are permitted.

There are two exceptions to the regulations which allow the use of a crossbow. The first provides for the use of a crossbow by any licensee having a disability which totally and permanently prevents the use of a conventional bow. Such disabled hunters must first obtain a certified statement from a medical doctor licensed in Louisiana. This statement is submitted to the Department of Wildlife and Fisheries, and a crossbow permit is issued to the hunter. This permit and required licenses must be in the hunter's possession while hunting with the crossbow.

The other exception provides for those persons of 60 years of age or older who have been residents of the state for at least two years. Hunters meeting those requirements may hunt and take deer with a crossbow or bow and arrow, without a crossbow permit or bow hunting license.

Another commonly asked question concerns the one per day, six per season limit on deer in the state. Many hunters incorrectly assume that archery and gun segments are separate seasons and allow two season limits. In fact, the six per season limit includes all segments and all methods of take.

Archery hunters are reminded that it is unlawful to take spotted fawns, and the use of dogs to trail wounded deer is expressly prohibited in still hunting areas, and during still hunting segments, including the archery segment. Remember also that hunter orange is required when a gun season for deer is in progress, except when hunting on legally posted land where firearm hunting is not permitted by agreement of the owner or lessee. As an added precaution archery hunters are encouraged to wear hunter orange while walking to and from stands at all times.

For more information on bow hunting or any other hunting regulations contact your nearest LDWF district office or a wildlife enforcement agent.

[illegible]

Annual Drawing

Louisiana's National Hunting & Fishing Day

Saturday, September 24, 1994

Absolutely no alcoholic beverages allowed.

Participation Activities
(instructors present)
canoeing
fishing clinic
shooting (BB, skeet,
muzzleloading)
archery target shooting
duck & goose calling clinic
duck calling contest
boating education

Demonstrations
archery hunting
bait casting
retrievers
firing of cannon net
jig fishing
falconry

Typical Exhibits
Commercial Fishing Industry
GCCA
Ducks Unlimited
La. Wildlife Federation
Coastal Management
Operation Game Thief
Fisheries Management
Dept. of Environmental Quality
LSU Sea Grant Litter Program
Game Management & Research
Dept. of Natural Resources
Coastal Restoration
Nature Conservancy
Artificial Reef Program
La. Natural Freshwater Catfish Assoc.
Audubon Society
Live birds of prey, turtles, alligators!

Kids Fishing Contest
Bait furnished, limited poles available

Purchase boat registrations, hunting and fishing license.

Free samples of Louisiana game and seafood dishes at the tasting booths.

Statewide Locations
- Baton Rouge 504/765-2866
- Minden 318/371-3050
- Monroe 318/343-4044
- Natchitoches 318/221-5885

(Activities will vary by location)

NATIONAL HUNTING & FISHING DAY September 24, 1994

CONSERVATION notes

Gretna Taxidermist Wins LDWF Secretary's Cup

Jerry Bourg, owner of Southeast Taxidermy in Gretna, was awarded the 1994 Secretary's Cup for his work showcasing two huge bluegills. The award was announced at the Louisiana Wildlife and Fisheries Commission meeting on July 7, 1994.

The Secretary's Cup competition was developed in 1987 by officials of the Department of Wildlife and Fisheries and the Louisiana Taxidermist Association to promote the art of taxidermy. Bourg's award is the seventh Secretary's Cup presented to Louisiana taxidermists.

Bourg, a 12-year veteran taxidermist, followed the 1994 panfish theme wonderfully, showing two Toledo Bend bluegills swimming around a cypress stump. His work is quite detailed and includes a nest full of eggs.

The winning mount was donated to the department for permanent display in the LDWF headquarters building, as stated in the contest rules. LDWF Secretary Joe L. Herring announced that the wonderful creation will be exhibited in the third floor lobby.

Secretary's Cup Chairman Howard Callahan, taxidermist Jerry Bourg and LDWF Secretary Joe L. Herring (left to right) pose with Bourg's award-winning mount.

White-fronted Goose Chosen For 1995-96 Duck Stamp

The White-Fronted Goose will be the subject for the 1995-96 state waterfowl art competition, Department of Wildlife and Fisheries officials announced on July 7. Louisiana artists are invited to compete for the recognition of having their work chosen as the image for the State Waterfowl Conservation Stamp, or Duck Stamp.

Entries must be sent to Dave Morrison, Louisiana Waterfowl Conservation Stamp Program, Louisiana Department of Wildlife and Fisheries, 2000 Quail Drive, Baton Rouge, LA 70808.

Entries must be received by Oct. 26, 1994. No submission will be considered without a signed, notarized Artist Agreement and a $50 entrance fee. Artist Agreements are available by writing to the above address.

Selection of the winning design will begin at 9:30 a.m. on Nov. 2 at LDWF headquarters in Baton Rouge.

More information about contest rules and judging can be obtained by writing the above address.

Becoming an Outdoors-Woman

There are only two weeks left to register for LDWF's Becoming an Outdoors-Woman program, designed to encourage Louisiana's women to participate in outdoor sports.

The event, sponsored by the department's Information and Education Division, is scheduled for Sept. 16-18 at Camp Grant Walker in Pollock. Registration is only $125 and includes a weekend full of fun in outdoor-related activities such as bird watching, gun sports and wildlife identification.

Space is limit to 100 people, but plans are being made for next year's event. Anyone who, for lack of space, cannot attend this year will be placed on a mailing list and kept abreast of when and where the popular program will take place next year.

For more information, call LDWF's I&E Division at 504/765-2916.

Lifetime Licenses

Hughes, Joshua A.	Livingston
Jones, Mack E.	Bossier City
Jones, Todd W.	Shreveport
LeBlanc, Jason M.	Belle Chasse
Madere, Jr., Steven S.	Luling
Russell, William S.	Jonesville
Sweet, Dusty	Junction City
Vizzier, Kirk A.	Alexandria
Watts, III, Jewel N.	LaPlace
Beaty, Travis R.	Haughton
Blewett, Johathan M.	Shreveport
Coco, Stanley A.	Baton Rouge
Faciane, Neal K.	Slidell
Folden, Kenneth D.	Jonesboro
Gaspard, Terrance P.	New Orleans
Hart, Charles T.	Monroe
Johnson, Sr., Charles	Woodville,MS
Lyacano, Jr., Harold A.	Pearl River
Madere, Ronald A.	Mandeville
Markezich, Samuel T.	Metairie
Spencer, Charles M.	Bastrop
Sturdivant, Clovis H.	Natchitoches
Vidrine, Jody	Baker
Williams, Joseph A.	Baton Rouge
Womack, Roy D.	Many
Young, Marcus S.	Lake Charles
Ardoin, Lucien L.	Mamou
Box, John B.	Centerville
Calloway, Ryan A.	Delhi
Cowart, William D.	West Monroe
Crossen, Kevin G.	River Ridge
Dale, Rory L.	Monterey
Deslatte, Wayne J.	Centerville
Griffin, Charles R.	Slidell
Guidry, David W.	Rayne
Guillory, Lawrence A.	Franklin
Harris, Glenn A.	Lake Charles
Keaton, Charles P.	Bogalusa
McPherson, Jr., William	Woodworth
Mitchell, Eric J.	Destrehan
Mitchell, Jonathan E.	Destrehan
Olivier, Jr., James A.	Sulphur
Olivier, Michael T.	Westlake
Rome, Ryan J.	Garyville
Schulz, Leslie L.	St. Bernard
Viola, Jr., Clemen L.	West Monroe
White, Kerry L.	Harrisonburg
Arabie, Brandon T.	Grand Isle
Badon, Jr., Richard M.	Covington
Bishop, Morrie A.	St. Amant
Browning, Thomas G.	Bourg
Carson, IV, James R.	Youngsville
Duvernay, III, Alvin E.	New Orleans
Gordon, Allen F.	Many
Matherne, Andrew P.	Addis

Louisiana Conservationist Order Form

Send this Subscription to:

Name ______________________________
Address ____________________________
City ____________ State ___ Zip ___ Phone __________

I would like my subscription to last for _____ years (1,2,4). Enclosed is my payment of:

☐ *$8 for one year ☐ *$14 for two years ☐ *$24 for four years

A Christmas Gift! *(gift giver)*

Name ______________________________
Address ____________________________
City ______________ State ___ Zip _____ Phone ________

Method of Payment:

☐ Check/money order ☐ MasterCard ☐ VISA ☐ Bill me

If MasterCard or VISA, give information below:

Acct# ______________________________
Signature ______________________ Exp. Date ________

Send your order to (checks payable to):
Louisiana Conservationist
P.O. Box 98000, Baton Rouge, LA 70898-9000

*Subscription rates valid only if postmarked by Oct. 31, 1994 (10/94)

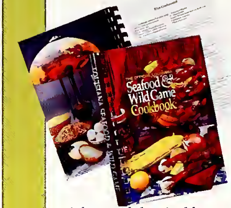
Are you moving?

Paste an old label with your old address in the box below. ***A change in address cannot be processed without the old label.*** Allow six weeks for the change.

Paste old label here.

New Address:
Name ______________________________
Address ____________________________
City __________ State ______ Zip __________
Phone ______________________________

Send to:
Louisiana Conservationist
P.O. Box 98000, Baton Rouge, LA 70898-9000



Louisiana's Wild Game & Seafood Cookbook

A beautiful spiral bound collection of over 450 time-tested recipes with wonderful color photographs for only $14.95. A collection of recipes ranging from crawfish to alligator. The perfect gift for any sportsman or kitchen gourmet.

A Christmas Gift!

Send Cookbook to:

Name ______________________________

Address ____________________________

City __________ State ______ Zip __________

Phone ______________________________

My payment of $_______ is enclosed for _______ cookbooks. I have added $______ for appropriate sales tax and shipping.

If MasterCard or VISA, give information below.

Account #____________________________
Expiration Date:_______________________
Signature____________________________

Send your order to (checks payable to LSU Press):
Louisiana State University Press
Louisiana Conservationist
Cookbook Offer
Baton Rouge, LA 70893

PLEASE NOTE:

Make checks and money orders payable to LSU Press or charge to your MasterCard or Visa. $14.95 per cookbook plus $1.50 postage and handling for the first book ordered and $.50 for each additional book. Louisiana residents must add 4% sales tax. East Baton Rouge residents, please add an additional 4% sales tax. Allow two to four weeks for delivery.

Bayou Kitchen

by Wayne Miller

Photo by Ken Glaser

Broiled Stuffed Flounder

4	flounders, approx. 2 lbs. each
1	medium onion, minced
1/2	cup green onion, chopped
2	stalks celery, minced
3/4	lb. mushrooms, sliced
1 1/2	cup raw shrimp, chopped
1/2	cup raw bacon, finely chopped
1	Tablespoon Worcestershire sauce
1/2	cup white wine
	bread crumbs
2	Tablespoons parsley, chopped
2	Tablespoons oil
4	Tablespoons butter

Saute bacon, chopped onion, green onions and celery until soft or translucent, (add small amount of oil if necessary.) Next, add raw shrimp and mushrooms. Cook until shrimp develops pink color. Add parsley, Worcestershire, wine and enough bread crumbs to hold the dressing together. Season with salt & pepper.

Clean and make a slit in each flounder forming a pocket. With generous mound of dressing, stuff the prepared fish. Heat oil and butter together. Place stuffed fish on tray and spoon over with oil mixture; broil under low to medium flame, basting with same butter/oil mixture until fish is brown and done. Spoon remaining sauce over fish and serve hot with lemon wedges. Serves 4.

Carrot-Beet Salad

1/2	cup celery, chopped
2	cups cooked carrots
1	(15 oz.) can whole beets drained and sliced
1	Tablespoon lemon juice
1	Tablespoon honey
	lettuce leaves
2	Tablespoons chopped, toasted walnuts or sesame seeds

Combine carrots, beets, celery, lemon juice and honey, tossing gently. Serve on cold lettuce leaves. Sprinkle with walnuts or sesame seeds.

Apple-Pecan Pound Cake

2	cups sugar
1 1/2	cup vegetable oil
3	large eggs
3	cups all-purpose flour
1	teaspoons baking soda
1	teaspoon salt
1 1/2	teaspoon vanilla
3	cups finely diced peeled apples (Granny Smith)
3/4	cup flaked coconut
1	cup chopped pecans

Mix sugar and oil; add eggs and beat *well*. Combine flour, soda and salt. Add flour mixture to beaten egg mixture. Stir in vanilla, apples, coconut, and pecans. Mix well. Spoon batter into a greased tube pan. Bake at 325 degrees for 1 hour and 20 minutes. Allow cake to cool to room temperature before removing from pan.